HOW SHIPPING TEMPERATURES AFFECT SAUVIGNON BLANC WINE COMPOSITION

PART 2

South African wines are transported over very long distances by land and sea and are exposed to variable and extreme environmental conditions, which may affect the quality of the wine. Part 1 of this blog series looked at shipping temperatures and the fluctuations that occur during intercontinental shipping during different seasons. Part 2 will look at the effect of this type of transport variability on a South African Sauvignon Blanc wine by summarising a study by Du Toit and Piquet titled, “Effect of simulated shipping temperatures on the sensory composition of South African Chenin blanc and Sauvignon Blanc wines.”
MATERIALS AND METHODS

A bottled Sauvignon blanc wine was stored at variable temperatures over a period of 46 days. The idea was to investigate the effect of different constant storage temperatures (some quite extreme), as well as variations in temperatures (simulating shipping conditions during export) on the wine’s sensory composition.

The four different conditions:

» Constant: -4°C
» Constant: 15°C
» Constant: 37°C
» Variable:
  » 7 days: 30°C (for 8 hours) then 37°C (for 8 hours) then 20°C (for 8 hours)
  » 30 days: Constant 15°C
  » 7 days: -4°C (for 8 hours) then 4°C (for 8 hours) then 8°C (for 8 hours)

The variable temperatures were chosen to simulate departure from a South African port in the summer months, ending in European winter diurnal temperatures.

After the storage period, the wines were subjected to sensory evaluation using a trained sensory panel. The judges were asked to rate the wines on a scale of 0 to 100 according to visual yellow colour intensity as well as the intensity of the following aroma attributes:

» Fruity
» Tropical
» Sulphur-like
» Over-aged
» Burning
» Vegetative
SENSORY RESULTS

Results from the sensory tests showed a clear distinction between the wines stored at 37°C and all the other storage temperatures (including the variable storage temperatures). The wine stored at 37°C had higher intensities of aroma attributes such as over-aged aroma, burning sensation, sulphur aroma and also had a higher scoring for yellow colour. The other three treatments were associated with more positive attributes such as vegetative, fruity and tropical.

Comparing only the -4°C, 15°C and the variable storage temperatures it was evident that the sensory differences between the variable temperatures and constant storing at 15°C were minor. Storing the wine at -4°C resulted in lower intensities of sulphur aroma, burning sensation and overaged aroma and flavour (although differences were not always statistically significant).

CONCLUSION

It seems that South African Sauvignon Blanc is perhaps more susceptible to sensorial change when stored at a constant higher temperature and not as affected to temperature variations. Elevated storage temperatures can accelerate natural acid hydrolysis of several aroma compounds, especially the varietal thiols and other aromatic esters. The decrease in these aromas will lead to wines being perceived as being less fresh and fruity.

Temperatures in containers stationed in Cape Town harbour can easily reach above 45°C for extended periods of time and as Part 1 showed, temperatures of above 25°C was maintained for three weeks while a ship was travelling on a route from Australia to the Netherlands. Such high temperatures will not only be detrimental to the wine composition and quality but will also have implications on the closure’s sealing capabilities and efficiency.

Options to protect shipped wine from these variable conditions includes insulating material as well as temperature-controlled containers. Although costly, temperature-controlled containers seem the most effective method to retain the quality of valuable wines when transporting them in adverse environmental conditions.
Whether transport conditions can be controlled or not, it is also always a good idea to keep retention samples that are stored at various temperatures so a comparison can be drawn if queries regarding shipping conditions were to arise.

This study not only sheds light on the effect of shipping temperatures but also on general cellaring temperatures. Often the storage temperature recommendation for white wine (especially Sauvignon Blanc) is below 15°C. However, this study and many thereafter³, clearly shows the fragility of key aroma compounds which necessitates that storage temperature is as low as possible (without freezing the wine).

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REFERENCES


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